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The following table gives a summary of these observations.

NAME OF TREE.	Average Age in Years.	Average Annual Increase in Diameter.	Average Annual Ring Thickness.	Average increase in Height per year.	No. of Trees on which the Average was taken.	Relative Rapidity of Vertical Growth.	Relative Thickness of the Annual Ring.
<i>Abies excelsa</i>	32.6	0.61"	0.30"	1.73'	3	1	3
<i>Salix alba</i>	32	1.06"	0.53"	1.62'	3	2	1
<i>Liriodendron</i>	38	0.45"	0.22"	1.57'	1	3	13
<i>Abies balsamea</i>	30	0.38"	0.19"	1.56'	8	4	16
<i>Juglans nigra</i>	26	0.41"	0.20"	1.55'	2	5	15
<i>Larix Europæa</i>	34	0.29"	0.15"	1.53'	3	6	21
<i>Pinus Strobus</i>	27	0.51"	0.25"	1.52'	1	7	10
<i>Acer rubrum</i>	28.4	0.45"	0.22"	1.51'	5	8	14
<i>Ailanthus</i>	31	0.59"	0.29"	1.46'	11	9	4
<i>Prunus Cerasus</i>	29	0.54"	0.27"	1.40'	7	10	7
<i>Catalpa</i>	32	0.55"	0.28"	1.39'	5	11	6
<i>Betula alba, var. populifolia</i>	34	0.18"	0.09"	1.32'	3	12	26
<i>Ulmus Americana</i>	38	0.52"	0.26"	1.31'	2	13	8
<i>Paulownia</i>	31	0.58"	0.29"	1.29'	1	14	5
<i>Aplpe-trees</i>	23	0.65"	0.32"	1.23'	6	15	2
<i>Pinus mitis</i>	38	0.45"	0.23"	1.18'	2	16	12
<i>Pinus rigida</i>	36.2	0.31"	0.15"	1.17'	5	17	20
<i>Thuja occidentalis</i>	28	0.32"	0.16"	1.15'	3	18	19
<i>Castanea vesca</i>	52.3	0.51"	0.25"	0.93'	7	19	9
<i>Sassafras</i>	27.1	0.23"	0.12"	0.96'	8	20	23
<i>Carya tomentosa</i>	70.4	0.20"	0.10"	0.95'	5	21	24
"Black Oak." (<i>Q. rubra</i> ?).....	37	0.47"	0.24"	0.94'	4	22	11
<i>Quercus alba</i>	47.3	0.35"	0.18"	0.88'	6	23	17
<i>Fagus ferruginea</i>	44.8	0.36"	0.18"	0.78'	5	24	18
<i>Diospyros</i>	52	0.27"	0.13"	0.67'	1	25	22
<i>Juniperus Virginiana</i>	59.7	0.21"	0.10"	0.58'	12	26	25

§ 309. *Vitis*.—In the June number of last year I have enumerated some of the characters which distinguished *Vitis riparia* from *cordifolia*. I can now confirm all I have said there. Our present spring being later than the very precocious one of last year, *riparia* bloomed about May 10th and *cordifolia* begins now, May 27, to open.

Another, and a very valuable, character to distinguish *riparia* not only from *cordifolia*, but from all other species of *Vitis* has been

indicated by Prof. Millardet of Bordeaux, and is fully confirmed by my observations made on specimens from all parts of their geographical area.

The dissepiments or diaphragms, as they are called, which at each node interrupt the medullary tissue, and which are best studied in vines of the previous year, are in *riparia* very thin, only $\frac{1}{8}$ to $\frac{1}{4}$ of a line in thickness, while in *cordifolia* they are $\frac{1}{2}$ –1 line thick, and in *aestivalis* a little thicker yet.

Pursuing these investigations through all the species of *Vitis* attainable, I find that the Rocky Mountain *Vitis* and that from Lake Superior have been correctly referred to *riparia*, while *V. Arizonica*, about the relationship of which I had some doubts, is certainly distinct from *riparia*.

All true *Vitis* have such diaphragms at each node, while all the species of *Ampelopsis* and of *Cissus* are destitute of them. But the startling fact appears that *V. vulpina* of the South in this character is different from all other *Vitis* species and affiliates with *Cissus*, its pith being continuous and not interrupted.

V. cordifolia, thus completely separated from *riparia*, approaches, strange as it may seem, close to *aestivalis* in the character of the diaphragm, in its period of flowering, and even in its seeds, and the connection seems to be made by that western entire-leaved and small and black-fruited form of *aestivalis*, which I have distinguished as *cinerea*, to which downy-leaved forms of *cordifolia* approach almost too closely.

All the species of *Vitis* contain in their foliage more or less of a fragrant principle, most probably Cumarin, which the dried leaves retain with such tenacity, that even after fifty years in the herbarium they exhale this very distinct odor. In *cordifolia* I find it much more strongly developed than in any other species.

St. Louis, Mo.

G. ENGELMANN.

§ 310. **Dr. Rugel.**—We have very lately received intelligence of the death of Dr. Rugel in Upper East Tennessee. He was a German sent to this country in about 1842, by Mr. R. J. Shuttleworth, to collect shells and plants for him, which Dr. R. did in Cuba, Florida, Texas, Georgia and Tennessee. Dr. Rugel was a good collector. Several of our North American Helices were discovered by him, as noted by Mr. Shuttleworth with the published descriptions—one species named *Helix Rugeli*. He seems to have been the only one who has detected the singular *Lechea divaricata* of Shuttleworth, one of the rarest of American plants, if indeed it is not a very peculiar form of *L. major*, as is barely possible. The only specimen we believe in this country is in Dr. Gray's Herbarium, unless there be one in Rugel's own collection. It was found near the Manatee River in Florida.

Dr. Rugel left a large collection of both shells and plants. Of the former many are not named, and the locality of some not given. The plants are in better order; they are labelled and catalogued. There are 3,000 or more European plants, and a large collection of American.